Digitization by eGangotri-South Center

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾಲಯ
ಮಾನಸಗಂಗೋತ್ರಿ, ಮೈಸೂರು ೫೭೦ ೦೦೬

KARNATAKA STATE OPEN UNIVERSITY
Manasagangotri, Mysore - 570 006

M.A. (FINAL)

SANSKRIT
- ENGLISH MEDIUM

101

LINGUISTICS

COURSE - 8

BLOCK - 19

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

ಉನ್ನತ ಶಿಕ್ಷಣಕ್ಕಾಗಿ ಇರುವ ಅವಕಾಶಗಳನ್ನು ಹೆಚ್ಚಿಸುವುದಕ್ಕೆ ಮತ್ತು ಶಿಕ್ಷಣವನ್ನು ಪ್ರಜಾತಂತ್ರೀಕರಿಸುವುದಕ್ಕೆ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ವ್ಯವಸ್ಥೆಯನ್ನು ಆರಂಭಿಸಲಾಗಿದೆ.

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ 1986

The Open University system has been initiated in order to augment opportunities for higher education and as instrument of democrating education.

National Education Policy 1986

ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯವು ದೂರಶಿಕ್ಷಣ ಪದ್ಧತಿಯಲ್ಲಿ ಬಹುಮಾಧ್ಯಮಗಳನ್ನು ಉಪಯೋಗಿಸುತ್ತದೆ.
.....ವಿದ್ಯಾಕಾಂಕ್ಷಿಗಳನ್ನು ಜ್ಞಾನ ಸಂಪಾದನೆಗಾಗಿ ಕಲಿಕಾ ಕೇಂದ್ರಕ್ಕೆ ಕೊಂಡೊಯ್ಯುವ ಬದಲು, ಜ್ಞಾನ ಸಂಪತ್ತನ್ನು ವಿದ್ಯೆ ಕಲಿಯುವವರ ಬಳಿ ಕೊಂಡೊಯ್ಯುವ ಪಾಹಕವಾಗಿದೆ.

ಡಾ. ಕುಳಂದೈಸ್ವಾಮಿ

"The Open University system makes use of Multimedia in distance education system.
..... it is vehicle which transports knowledge to the place of learners rather than transport to the place of learning.

Dr. Kulandai Swamy

ವಿಶ್ವಮಾನವ ಸಂದೇಶ

ಪ್ರತಿಯೊಂದು ಮಗುವು ಹುಟ್ಟುತ್ತಲೇ - ವಿಶ್ವಮಾನವ. ಬೆಳೆಯುತ್ತಾ ನಾವು ಅದನ್ನು 'ಅಲ್ಪ ಮಾನವ'ನನ್ನಾಗಿ ಮಾಡುತ್ತೇವೆ. ಮತ್ತೆ ಅದನ್ನು 'ವಿಶ್ವಮಾನವ'ನನ್ನಾಗಿ ಮಾಡುವುದೇ ವಿದ್ಯೆಯ ಕರ್ತವ್ಯವಾಗಬೇಕು.

ಮನುಜ ಮತ, ವಿಶ್ವ ಪಥ, ಸರ್ವೋದಯ, ಸಮನ್ವಯ, ಪೂರ್ಣದೃಷ್ಟಿ ಈ ಪಂಚಮಂತ್ರ ಇನ್ನು ಮುಂದಿನ ದೃಷ್ಟಿಯಾಗಬೇಕಾಗಿದೆ. ಅಂದರೆ, ನಮಗೆ ಇನ್ನು ಬೇಕಾದುದು ಆ ಮತ ಈ ಮತ ಅಲ್ಲ; ಮನುಜ ಮತ. ಆ ಪಥ ಈ ಪಥ ಅಲ್ಲ; ವಿಶ್ವ ಪಥ. ಆ ಒಬ್ಬರ ಉದಯ ಮಾತ್ರವಲ್ಲ; ಸರ್ವರ ಸರ್ವಸ್ತರದ ಉದಯ. ಪರಸ್ಪರ ವಿಮುಖವಾಗಿ ಸಿಡಿದು ಹೋಗುವುದಲ್ಲ; ಸಮನ್ವಯಗೊಳ್ಳುವುದು. ಸಂಕುಚಿತ ಮತದ ಆಂಶಿಕ ದೃಷ್ಟಿ ಅಲ್ಲ; ಭೌತಿಕ ಪಾರಮಾರ್ಥಿಕ ಎಂಬ ಭಿನ್ನದೃಷ್ಟಿ ಅಲ್ಲ; ಎಲ್ಲವನ್ನು ಭಗವದ್ ದೃಷ್ಟಿಯಿಂದ ಕಾಣುವ ಪೂರ್ಣದೃಷ್ಟಿ.

ಕುವೆಂಪು

Gospel of Universal Man

Every Child, at birth, is the universal man. But, as it grows, we turn it into "a petty man". It should be the function of education to turn it again into the enlightened "universal man".

The Religion of Humanity, the Universal Path, the Welfare of All, Reconciliation, the Integral Vision- these *five mantras* should become View of the Future. In other words, what we want henceforth is not this religion or that religion, but the Religion of Humanity ; not this path or that path, but the Universal Path ; not the well-being of this individual or that individual, but the Welfare of All ; not turning away and breaking off from one another, but reconciling and uniting in concord and harmony ; and, above all, not the partial view of a narrow creed, not the dual outlook of the material and the spiritual, but the Integral Vision of seeing all things with the eye of the Divine.

Kuvempu

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

MA (FINAL) – SANSKRIT

KSOU
MGM -06

ब्लाक सं

19

" LINGUISTICS "

Unit No. 1 to 4
अनुक्रमणिका : - **Page No.**

Unit 1 Introduction to Linguistics 1 - 20

Linguistics, Nature and scope Definition,
Nature and Scope of Language

Unit 2 Linguistics 21 - 32

Theoretical Linguistics,
The Descriptive School
Descriptive Linguistics - An Outline

Unit 3 Phonetics 33 - 42

Different Approaches to Phenetics,
Articulatory Phonetics.
Acoustic phonetics and Audiotory Phonetics,
Organs of Speech and their functions

Unit 4 Phonetics 43 - 66

Production and classification of speech sounds,
Vowels and consonants

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

COURSE DESIGN AND EDITORIAL COMMITTEE

Prof. B.A. Vivek Rai
Vice-Chancellor & Chairman
Karnataka State Open University
Mysore - 570 006.

Prof. K.T. Shivanna
Dean (Academic) - Convener
Karnataka State Open University
Mysore - 570 006.

Dr. N. Radhakrishna Bhat
Chairman
Department of Studies
and Research in Sanskrit
Karnataka State Open University
Mysore - 570 006.

Editor & Subject Co-ordinator

Dr .K.P Acharya, MA Ph.D.,
Prof - cum Deputy director (Rtd),
Central Instiute of Indian Language
Manasagangothri,
Mysore - 570 006

Course Writer

Developed by Academic Section, KSOU, Mysore.

Karnataka State Open University, 2004.

All rights reserved. No part of this work may be reproduced in any form, by mimeography or any other means, without permission in writing from the Karnataka State Open University.

Further information on the Karnataka State Open University Programmes may obtained from the University's Office at Manasagangotri, Mysore - 6.

Printed and Published on behalf of Karnataka State Open University, Mysore- 6 by Registrar (Administration).

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

प्रस्तावना

प्रियाः संस्कृतविद्यार्थिनः

अस्मदीयकर्णाटकराज्यमुक्तविश्वविद्यानिलयस्यस्नातकोत्तरशिक्षणविभागे अन्तिमवर्षस्य संस्कृतकक्ष्यां प्रवेष्टृभ्यः भवद्भ्यः सर्वेभ्यः हार्दं सुस्वागतं व्याहरामि।

जगतीतलस्य प्राचीनतमभाषासु अग्रिमपङ्क्तौ विराजमाना संस्कृतभाषा अद्वितीयत्वेन वर्तते। वैदिकसंस्कृतं लौकिकसंस्कृतमिति संस्कृतं द्विधा विभक्तमस्ति। क्रिस्तपूर्वकाले वेदेषु दृश्यमानेयं भाषा क्रिस्तपूर्वपञ्चमशतके काव्यस्वरूपमलभत इति विदग्धाः विद्वांसः वदन्ति। उत्तरोत्तरकाले संस्कृतभाषासौ उन्नतशिक्षण-शासन-लेखन-काव्यादिषु सततं समुपयुज्यमाना सती सर्वत्र व्याप्तासीत्। विश्वस्य प्राचीनतमभाषासु संस्कृतभाषैव प्रप्रथमा इति भाषाविदः विमर्शकाश्च कथयन्ति। प्रायः लोके पञ्चसहस्र-वर्षाधिकम् इतिहासं लब्धवती संस्कृतादन्या भाषा एकापि नास्ति।

चत्वारो वेदाः विविधानि शास्त्राणि रामायण-महाभारतनामकादीतिहासाः अष्टादशपुराणानि-उपपुराणानि षड्दर्शनानि अनेकानि काव्यानि शास्त्र-व्याख्यानानि प्रशस्तयः शासनानि चाटुपद्यानि सुभाषितानीत्येवं रीत्या विविधप्रकारेषु निबद्धाः कृतयः संस्कृतवाङ्मये भूरि विलसन्ति। एतेषां परिचयः पाठ्यक्रमानुरोधेन यथावकाशं कारयिष्यते। संस्कृते विशेषाध्ययनार्थं गहनतमसंशोधनार्थं च युष्माकं सज्जीकरणमेव स्नातकोत्तरशिक्षणस्य मुख्यः उद्देशः।

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

आसु अन्तिमवर्षस्य कक्ष्यासु यूयं वेदसूक्तानि उपनिषदं-भगवद्गीतां वैदिकसाहित्यचरित्रं कौटलीयम्-अर्थशास्त्रम् याज्ञवल्क्यस्मृतिं वाल्मीकिरामायणे सुन्दरकाण्डस्य कांश्चन सर्गान् प्रबन्धलेखनानि वैयाकरणसिद्धान्तकौमुद्यां समासप्रकरणं भाषाशास्त्रम् आनन्दवर्धनस्य ध्वन्यालोकं मम्मटस्य काव्यप्रकाशं प्राचीनार्वाचीनालङ्कारिकाणां परिचयं भारतीय-पाश्चात्यसाहित्यविमर्शयोः तुलनात्मकमध्ययनं च करिष्यथ।

युष्माकं स्वाध्यायसुलभाय स्वयंबोधनपद्धत्या (SIM) उपर्युक्तविषयेषु पाठाः विशिष्टरूपेण विद्वद्भिः आरचितास्सन्ति। अनेके विद्वांसः एतान् पाठान् महता परिश्रमेण सज्जीकृतवन्तः तेषां साहाय्यं सकार्तज्ञं संस्मरामि।

यूयं सर्वे एतान् सम्यगधीत्य एतेषु विषयेषु विशिष्टं ज्ञानं सम्पादयत इत्याशासे। "श्रद्धयाग्निः ज्ञानं समिध्यते" इति वेदवाण्यनुसारात् युष्माभिः श्रद्धाकृतमध्ययनं फलप्रदं यशःप्रदं च भूयादिति मदीयः आशयः। शुभं भवतु।

जीयात् गीर्वाणभारती

डा.एन्. राधाकृष्ण भट्
संस्कृतविभागाध्यक्षः
कर्णाटकराज्य-मुक्तविश्वविद्यानिलयः
मानसगङ्गोत्री, मैसूरु

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Block - 19

Unit - 1

INTRODUCTION TO LINGUISTICS

1.0 Linguistics : Nature and Scope

Linguistics deals with a scientific study of Language. To commence with we should first have a clear idea of what we mean by language. By the word 'language' different people get different meanings. But from the point of view of the science of linguistics 'language' is what we all human beings speak. Kannada, Hindi, Tulu, English etc., are all languages. Human speech used by a group of people is entitled to be called as language.

1.1 Speaking a lanügage is a special activity of human beings.

Speaking a lanugage is such a natural activity of man (by 'man' we mean all human beings) like eating and drinking, that no one pays any serious attention to think about language. But when one does really think one would realise that speaking a language is a very special activity of man. It is language which makes man different from other animals.

It is language which enables man to live in groups and societies. It is language which enables man to communicate and in-

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

teract with other members of his own group, exchanging his ideas and fulfilling his needs. In short, we can say that it is language which makes man what he is.

1.2 Evolution of the science of Linguistics

When language is such a very important possession of man, it is very natural that interest in the study of language had caught the attention of man in the very early period of man's history, both in the East and the West.

In the West, the ancient Greeks, even as early as in the 5th and the 4th centuries B.C studied their own language, Greek. Leonard Bloomfield, the Doyen of modern linguistics observes that the Greeks had "discovered the parts of speeck of their language, its syntactic constructions, genders, numbers, cases, persons. tenses and modes".

In the East also, and much earlier than the Greeks, the Ancient Indians. round about the 14th and 13th centuries B.C., during the Vedic period had shown equally great interest in the language of the Vedas and the grammar of the Vedic Sanskrit.

There are many references in the Vedic literature to language which was termed as vāk or speech. The most intersting reference is to be found in the Gopatha Brahmana (Part I, 124) where in questions regarding grammatical terms like Vibhakti,

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

dhatu etc., are reaised. The following text gives the actual questions raised:-

ओंकारम् पृच्छामः। को धातुः किं प्रातिपदिकम्,
किं नामाख्यातम्, किं लिंगम् किं वचनम्, का विभक्तिः,
कःप्रत्ययः, कः स्वरः, उपसर्गोनिपातः, किं वै व्याकरणम्,
को विकारः, को विकारी, कति मात्रः कति वर्णः, कत्यक्षरः,
कति पदः कः संयोगः, कि स्थाननादानुप्रदानानुकरणम्।

गोपथब्रह्मण।१।२९

We ask the *o:nka:ra* what is *dha:tu* (verb root), what is *pra:tipadika* (noun stem or root) what are *na:ma* (noun) and *a:hya:ta* (verb) ? what is *liṅga* (gender) ? and what is *vacana* (number)? what is *vibhakti* (case) ? what is *pratyaya* (suffix) ? what is *svara* (vowel)? what is *upasarga* (prefix) and what is *nipa:ta* (pa:cle)? what is *vyatkarana* (grammar) what is *vika:ra* (deviant form) what is *vika:ri* (the one which deviates)? How many *ma:ras* (durations)? How many *vaṃas* (sounds)? How many *aksharas* (letters) How many *padas* (words)? What is *saṁyoga* (Joinig i.e., Sandhi) what is sthdnana:a:nuprada:na nukaranam (repeating of sound as per its place of articulation, voia:ing etc)]

We can see that the questions raised are with reference to most of the grammatical concepts concerning any language. That such thoughts were raised and were in active discussion during the Vedic period has been testified even in the other Brahmana

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

literature. It was not simply discussion. The creation of the *Padapathas* for the Vedas which split up the Vedic mantras i.e., the *Samhita pathas* into separate words should be considered as the first tangible result of the application of grammar for practical purposes. No wonder that such thoughts culminated into a perfect system of grammar resulting in the Ashtadhyayi of Panini sometime in the 5th century BC. **The Ashtadhyayi of Panini remains even today as the most perfect grammar ever written on any language.**

In fact, it is generally believed that the principles of early modern linguistics which were enunicated by Leonard Bloomfield in his monumental work **'Language'** were largely influenced by the principles of language described by Panini in his Ashtadhyayi, Bloomfield had studied Panini and praises the Ashtadhyayi as 'one of the greatest momuments of human intelligence, Howerver, Bloomfield was quite objective in his approach and enunciated his principles on the basis of his observations of the many languages which he himself systematically studied and theorised. **Thus it was that Bloomfield marked the beginnning of modern linguistics.**

1.3 Modern Linguistics

We have used the term modern linguisties to distinguish it from the ideas people had about language before the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

appearance of the book 'Language' by Bloomfield.

Bloomfield gave an objective and a systematic approach to the study of language in a systematic manner and called it 'Linguisties'. In the beginning of his book itself he says "Linguisties, the study of language is only in its beginnings."

1.4 Scope of Linguistics

As such, it should be of interest for us to know the scope of linguistics. By scope we mean what are the aspects of language that we study in Linguistics.

To put it briefly, we may say that all aspects of language are expected to be studied under linguistics.

What is the nature of language? What is the form and content of language? What is grammar and what is meaning ? How does language help in communication ? What are the other uses of language ? All these and many other aspects related to language come under the purview of linguisties. However, all these topics form different branches of linguistics about which we can learn more when we go deeper into studies in Linguistics.

For the present, however, we may direct our attention to the main topic of linguistics which is **language, its nature and its definition.**

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1.5 Summary

We may sum up what we have said uptill now in the following lines :-

Linguistics deals with a scientific study of language. Though a language is a very common and natural activity of man, it is a special activity which distinguishes man from all other animals. It is only language which makes man what he is.

Language, being such a very important activity of human beings it had attracted the attention of the ancient Greeks and also the ancient Indians. Panini's Ashtadhyayi which is a grammar of the Sanskrit language written some time during the 5th or 4th century B.C represents the most perfect grammar ever written on any language in the world.

Bloomfield who wrote the first comprehensive book on linguistics was largely influenced by the principles of language enuciated by Panini in the Ashtadhyayi. As such we can say that early modern linguistics was largely evolved on the basis of Paninian principles, However Bloomfield has to be given due credit for the independent studies he conducted on many contemporary languages which in fact supported and corroborated the Paninian Principles.

We may, therefore, direct our attention to the definition and nature of language which forms the subject matter of Linguisties.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1.6 Definition, Nature and scope of Language

On Defining a Language

We have already learnt that linguistics deals with a scientific study of language. One of the characteristics of any scientific study is that the subject that is studied is precisely and clearly defined so that all the aspects of the subject are brought under the study. We may, therefore, see what is the definition of language that has been generally accepted by linguistics

In the formative stages of linguistics many definitions of language were offered but the one which became a working definition acceptabel to students of linguistics as well as scholars was the one which was offered by Bernard Block and G.L. Trazer. They defined language as follows:-

1.6.1 A language is a system of arbitrary vocal symbols by means of which a social group co-operates.

This definition was slightly modified in the Encyclopedia Britannica as follows:-

"Language may be defined as an arbitrary system of vocal symbols by means of which human beings as members of a social group and participants in culture interact and communicate".

This definition given by the Encyclopedia Britannica may be

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

taken as a comprehensive one as it incorporates the point the 'the members of the social group are participants in the culture of the group'.

1.6.2 Definition of language in the Indian Tradition

In the Indian tradition also, Panini in his *'shiksha'* has defined speech as follows :

आत्मा बुध्या समेत्यार्थान्
मनो युङ्क्ते विवक्षया।
मनः कायाग्नि माहन्ति
स प्रेरयति मारुतम्।।
मारुतस्तु उरसि चरन्
मन्द्रं जनयति स्वरम्।।

"The individual soul i.e., a person with a desire to speak (some thing) collates the meanings properly and engages the mind (to speak). The mind raises the bodily energy wich stirs up the air (the breath from the lungs) in the body. The air moving up through the chest generates clearly audible sound" This is the meaning of the Sanskrit passage given above, By rephrasing it in a suitable manner we get the following in English.

'When a person wants to speak something in a meaningful way, the bodily energy is put into action and the speech with the intended meaning is generated'

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

This is not merely a definition of language but also an explanation of the process of generating a language by an individual. That Panini had thought of this about two thousand five hundred years back itself tells about the greatness of the Indian tradition. This definition of Panini gets even greater importance in the context of computer science and information technology about which we would know when we get into deeper studies in linguistics.

1.6.3 Accepted definition in modern linguistics

However, for the present, the definition given in the Encyclopedia Brittanica which is based on the definition given by Block and Trager is taken as an acceptable standard definition, which has been formulated on the basis of objectively observable factors found in language.

It would be interesting to know what are the observable factors which are found in the definition given above.

The definition makes out the following points

1) Language consists of vocal symbols, which are arbitray in nature.

2) Language is used by human beings for the purpose of mutual communicaiton and interaction

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

3) The people who use language would belong to a social group as its members and participants in the culture of the group

4) Language constitutes a system

The above points are explained in the following paragraphs.

1.7 Nature of Language

Language consists of vocal symbols which are arbitrary in nature.

The nature of language is that it is spoken. All languages are spoken, All human beings speak one language or the other.

When people speak, they speak words and sentences which are sequences of sounds produced orally through their mouth. these words and sentences which are thus produced orally convey very definite and specific meanings which are clearly understood by all the other speakers of the same language. **In other words we can say that language consists of orally produced meaningful words and sentences.**

As the words and sentences are orally produced they are called as vocal sounds and as they have meanings they are called as symbols. These vocal symbols in the form of words and sentences are arbitrary in nature because it is not possible to establish any inherent, inseparable and permanent relationship

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

between a word and the object denoted by the word. This may be illustrated by taking an example. For instance an object like 'tree' is denoted by the spoken word [tree] in English, [mara] in Kannada, [pe:id] in hindi, [vṛksa] in Sanskrit and so on. We can see here that the object 'tree' is arbitrarily denoted by different words in different languages and the object 'tree' does not bear any direct relationship with any of the words of any of languages mentioned above. It is only a symbolic convention within each language that such and such a word would mean such and such a thing in a symbolic manner. A symbol is a sign which is used by convention to denote a particular thing.

We may, therefore, say that a language which is represented by orally produced words and sentences consists of vocal symbols which are arbitrary in nature.

1.7.1 Language is used by human beings for the purpose of mutural commmunication and interaction.

We may now ask the question as to why people use language or what is the purpose of language use ? We know as a matter of fact, that people speak to each other to communicate their ideas and feelings. Language as the vehicle of thought, conveys the thoughts of the speakers as information to the listeners. The speaker and the listener interact with each other

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

conveying information and co-operating with each other to fulfill each others needs.

We may, there fore, say that language is used by people for mutual communication and interaction.

1.7.2 People use language as members of a social group and as participants in the culture of the group.

Human beings use language for mutual communication and interaction because of necessity. Man is a gregarious animal, He has to live in societies. Man is also the most intelligent of the living beings and because of his intelligence he has been able to develop an advanced level of culture which makes his life happy and comfortable. All the members of the society are equally and collectively responsible for developing their culture and language is the only means through which they can interact and help to develop their culture, **Members of a social group, therefore, use language for purpose of mutual communication and the development of their culture.**

1.7.3 Language constitutes a system

In order to be a very efficient medium of communication language has to be a very systematic tool of communication which language undoubtelly is. It is such an efficient tool that man is

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

able to understand and interpret almost everything that happens around him. This is possible because language happens to be a structured system of symbols.

Language represents such a unique system which, with the help of a limitted, orally produced set of primitive sounds, is able to symbolically represent the entire range of experiences experienced by man around him. This is made possible by a hierarchical set of sub systems, one dependent on the other, commencing from a limitted number or orally produced sounds and then extending and reaching out to a wide world of human experiences.

1.7.4 Language as a system of systems

A language can be said to be system of three distinguishable subsystems viz.

1) the system of sounds or the phonological system,
2) the system of words or the morphological system and
3) the system of sentences or the syntactic system

1.7.4.1 The Phonological system:-

The phonological system represents the level of the sounds of the language each of which can be uttered as a separate sound segment. Every language will have a limitted number of such sound

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

segments. Different combinations of such sounds can produce a large number of different meaningful words of the language. The presence or absence of a sound in a word would cause a difference in the meaning of the word. Such sounds are called the phonemes of the language and the system which deals with the system of phonemes is called the phonological system of the language.

1.7.4.2 The morphological system:-

The morphological system represents the level of the words of the language. Words in any language can be observed to occur in different varying forms to suit the context in which it occurs, but without much variation in their basic meanings. As for instance in Sanskrit words Ra:mah, Ra:me:na, Ra: masya, Ra:ma:ya etc., are different case forms of the root word ra:ma. The basic meaning of Ra:ma as a person is common to all the words given above. But each word has an additional meaning attached to it because of the changed forms. In this way new words may be formed by following the various processes of word formation such as 1) inflexion 2) suffixation 3) compounding and so on. Such a system of word formation is called as the morphological system of the language.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1.7.4.3 The syntactic system:-

The syntactic system represents the level of the sentences in the language. Combinations of words which together form independent communicative units or completely meaningful units are called as sentences. Sentences in any language are formed according to a set of patterns which represent the syntactic system of the language.

These three, the above mentioned phonological system, the morphological system and the syntactic system together, as sub-systems, form the system of the language.

In this way a language is also called a system of systems.

1.8 Scope of Language

Now after knowing that language is a complicated system of different systems one would naturally like to know as to why one should study a language at all. In other words what is the scope of language? What are the uses and advantages of studying a language ?

In the very beginning we have said that it is language which makes man what he is. We have also said that language pervades all activities of human life. But such statements are very vague and general. What are the specific advantages of

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

scientifically studying a language, one would like to know.

In this context reference to language in our own tradition is quite interesting and illuminating. If we refer to the Tarkasangraha of Annambhatta in the main text and in the Dipika commentary we get the following statements:-

सर्व व्यवहारहेतुर्बुद्धिर्ज्ञानम् व्यवहारः शब्द प्रयोगः।

which means that the cause of all *vyavahara* is intelligence (which is the result of) knowledge. What does this mean? This may need an explanation. This means that man can use his intelligence because he has knowledge, ie., knowledge which he gains by his experiences and reasoning. He uses his intelligence in all his activities.

To illustrate, the early man who was a cave dweller in the wild observed animals having sharp and pointed horns using their horns for their own defence and protection. This was the knowledge that he obtained, that sharp and pointed horns could be used for defence. This was useful for him. Though man himself had no horns, by using his intelligence he could devise sharp and pointed weapons from stone for his defence. This is deduced from the historical relics of the Old Stone Age in the forms of sharp weapons made of stone.

The other sentence व्यवहारः शब्द प्रयोगः says that the activity of man is governed by the use of language. In fact the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

reasoning ability of man is controlled by language. He can reason within himself and also tell others to make them understand his point of view only by using language. If we understand this then we can understand the power of language. By using language we can make other people happy, we can make them work or we can even make some one wage a war against others. This is the power of language. **Thus language has the power to control human minds.**

Language is the store house of knowledge. At any one time the stock of vocabulary in the form of nouns and verbs can indicate the knowledge that the society as a whole has acaquired. The computer scientists and information technologists call this as **'knowledge representation'** by language.

Language used in different domains of social activities displays different special characteristics. Language used in commerce and business would be different from the language used in the courts of law. Language used in office and administration would be different from the ordinarily spoken language. Similarly language used in literature would be different from the language used in science and technology. Language, thus used in different domains of social activities would show differences in thir vocabulary, style and connotation. All these differences in use will not be known to all the people as a matter of fact, unless one makes specific attempts to know them. **This**

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

is where scientific studies of language comes in handy to improve one's ability to use language in different domains of language use.

Thus the scope of language pervades over the entire activity of the human beings with in a society.

1.9 Summary

We may sum up what we have said in the previous pages in the following words. We talked about the definition and nature of language.

The generally accepted definition of language was given by Bernard Block and G.L.Trazer in their book Outline of Linguistic Analysis. They had said that "a language is a system of arbitrary vocal symbols by means of which a social group cooperates"

This definition was slightly modified and given in the Encyclopedia Brittanica as follows :

'Language may be defined as an arbitrary system of vocal symbols by means of which human beings as members of a social group and participants in culture interact and communicate'

This modified definition adds to the earlier one the point that the members of the social group are also the participants in the culture of the social group.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Even in the Indian tradition which was enunicated by Panini a definition of language was given. Panini had said in his Shiksha that language consists of 'orally produced audible sounds which are spoken with the intention of conveying a meaning'.

However, the definition given by the Encycloped in a Brittannica has been the generally accepted definition which is also comprehensive. It has the following four characteristics which, together, describe the nature of language. They are as follows :

1) Language consists of vocal symbols which are arbitrary in nature.

2) Language is used by human beings for the purpose of mutual communicaion and interaction.

3) Human beings use language as members of a social group and as participants in the culture of the group.

4) Language constitutes a system

Then we dicussed the scope of language. We stated that language pervades the entire social activity of human beings. We also said that different social domains have different styles of language in use. In order to acquire proper control of language in different domains one has to study the different style. The above points were explained with examples.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1.10 Self Assessment Questions:

1. How do you define a language? Give a brief account of the nature and scope of language.

NOTES

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Block - 19

Unit - 2

LINGUISTICS

2.0 THEORETICAL LINGUISTICS

2.1 Descriptive Linguistics - Certain aspects

We have learnt in the previous chapters that linguistics deals with the scientific studies of languages. We have also learnt about the nature of language along with the definition of language. Let us know some thing more about the theoretical aspects of linguistics as a science.

While discussing the definition of language we have learnt that a language may be said to be a system of systems having a three tier system of phonology, morphology and syntax. A scientific study of lanugage would, therefore, deal with the phonological, the morphological and the syntatic study of the language in a systematic manner. However, before going further to discuss how these studies are undertaken it would be necessary toknow certain theoritical developments that have taken place during the course of development of linguistics as a science.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

2.1.0 Development of linguistic principles in two stages.

Theoretically we may say that linguistics developed in two stages, representing broadly two different schools of thought. The first one was the Descriptive School, also called as the Structural School and the second one was the Transformational Generative School of linguistics (The T.G.School). The T.G. School was in a way a theoretical advancement over the Descriptive School.

2.1.1 The Descriptive School

The Descriptive school was chronologically the earlier school which was represented by Bloomfield and his followers. The basic theoretical assumptions of this school were as follows:-

1) Every language has its own structure unrelated with the structure of any other language.

2) The structure is represented by every native speaker of the language who has learnt it as his or her mother tongue in early childhood from his / her parents within the family environment.

3) The structure of any language can be studied, analysed and described on the basis of the language specimens collected from a native speaker as an informent. An informent is a native speaker of a language who can provide the speech specimens of his language.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4) A description based on the analysis of a language in the phonological, the morphological and the syntactie levels whould represent a description of the grammar of the language as a whole. Such a grammar could be called as a descriptive or the structural grammar of the language.

5) A descriptive or a sturctural grammar would be useful in learning and teaching the language.

6) A language is a learnt behaviour, learnt by observation and imitation.

With these assumptions linguists in many parts of the world, including India worked on many languages and wrote descriptive grammars of many known and unknown languages. Descriptive linguistics, was thus in active practical use for about two decades in the nineteen fortys and fifties (from 1935 to 1960).

However the results of the studies undertaken on many languages during this period set the linguists thinking on new lines

2.2 Factors which changed the direction of linguistic theory.

They, the linguists, could observe that though the structures of the different languages were different there were, however, certain features which were found to be common to all the languages. They were as follows.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1) The unit of expression or communication was a sentence in all the languages.

2) In each sentence the notional concepts of the **Subject** as the done of an action and the **Predicates** as the action done by the subject were found to be inherently present in all the languages.

3) In any language the same meaning could be expressed by different sentences as in the case of **active** and **passive** constructions of sentences which could be exemplified by sentences like a) Rama killed Ravana and b) Ravana was killed by Rama. In such cases one sentence could be converted into another by framing an appropriate set of grammatical rules.

4) Mere description of the structures of such sentences would not enable one to understand the logical relationship that existed between the two such related types of sentences given in a) and b) above.

6) They also observed that a person could learn any language and, in fact, many languages if need be. They doubted whether just by observation and imitation alone such learning could take place. Rather, they felt, that it must be some God given ability of man which enables him to learn any language.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

2.3 Emergence of Transformational generative linguistics

Noam Chomsky in 1957 gave a concrete shape to such thoughts in his book **'Syntactic Structures'** which originated a new theory of linguistics called the **Transformational Generative Linguistics.**

Transformational Generative Linguistics proposed an entirely different approach to the study of language.

Theoretically, the Transformational Generative school was an advancement over the foundation laid down by the descriptive school as it carried with it many of the concepts formulated by the descriptive school. Therefore, in order to understand clearly modern linguistics one should commence his studies with descriptive linguistics.

In the floolwing pages a brief outline of descriptive linguistics is given.

2.4 Summary

In this chapter we have learnt that modern linguistics developed in two stages. The first one was descriptive linguistics which was initiated by Leonard Bloomfield and practiced by many of his followers. This was in active practice for a period of about 25 years from 1935 to 1960.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

The results of the work done on many languages on the lines of descriptive linguistics lead the linguists to think on different lines. A new line of thought on language was initiated by Noam Chomsky in his book 'Syntactic Structures' which originated a new theory of language which is called as Transformational Generative Linguistics.

Transformational Generative Linguistics, however, was also based on the same language fundamentals as was followed by Descriptive Linguistics. Therefore in order to understand modern linguistics one has to study descriptive linguistics first. A brief outline of the same is given in the following pages.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

2.5 DESCRIPTIVE LINGUISTICS - A BRIEF OUTLINE

In the earlier chapters we have learnt that modern linguistics began as descriptive linguistics. However, later as an advancement over descriptive linguistics it developed into Transformational Generative Linguisties. Though Transformational Generative linguistics has theoretically a different approach it is still based on the same fundamentals of language and as such to have a clear idea of linguistics it would be better to commence with descriptive linguistics.

2.5.1 The descreiptive method

In the context of the descriptive school of linguistics let us see how linguistic studies are undertaken in order to scientifically study a language.

Any language can be taken up for study. We have said in an earlier paragraph that both known and unknown languages were studied in India and their descriptive grammars were written. By known languages are meant languages like Kannada, Tamil, Engliah, HIndi etc for which there are writing systems in which books are written including books on grammar. By unknown languages are meant such languages as Tulu, Kodagu, Banjari etc which do not have any writing systems of their own and also do not have written grammars. In order to have a clear idea of how

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

linguistics is done from the beginning to the end it would be better to know how an unknown language is studied. One should know the theoretical aspects of linguistics which includes phonetics, phonemics, morphology and syntax. These aspects will be explained in the following pages.

We may notice here that while we have said earlier that a language has there systems namely phonology, morphology and syntax, now, here we are saying that a linguist should know four aspects, namely, phonetics, phonemics, morphology and syntax. There is no contradiction in this . This indicates that theoretically phonetics and phonemics form different sections of phonology. This division helps us in the study of unknown languages. This is explained below.

2.5.2 Studying an unknown language

We said in an earlier paragraph that we will explain how an unknown language can be studied.

We may start with the assumption, assumption No.(3) of descriptive Linguistics, mentioned earlier, that the structure of any language can be studied, analysed and described on the basis of the language specimens collected from a native speaker as an informant. We had also defined an informant as the native speaker of a language who can provide speech specimens of his own

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

language and that such specimens would be a valid representation of his language as it would represent its grammatical structure.

Now, when a linguist starts working with his informant and wants to write down what the informant speaks, he should be able to do two things. a) First he should be able to identify the sounds the, sounds that are being uttered by the informent b) second, he should be able to represent the sounds heard by him in the form of a writing system which would be unambigious and consistent. Both these abilities form part of the training in linguistics that the linguist has to undergo before taking up the study of any language. The branch of linguistic science which deals with these two abilities namely, identifying the speech sounds of any language and representing them in the form of writing system is called Phonetics.

2.5.3 Need for training in Phoneties

One may ask a question as to why such a training is needed; would it not be possible for everybody to do it ? Definitely not.

Now by experience we might might have observed that when we hear some one who speaks a language other than our own, which is not known to us, then it is not only that we do not understand the meaning of what is spoken but also that the sounds

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

appear to be peculiar and cannot be identified in terms of the sounds we use in our own language. This is because while the ability of a human being enables him or her to produce considerably a large number of sounds, the actual number of sounds used in any language will be only a fraction of the number of sounds that the human oral cavity can produce. The sounds used in one language may not be used in another language. **As a result the human ear, (though it has the ability to listen to and to perceive all the sounds that can be produced by other human beings) will learn, by habit and for convenience, to ignore all such sounds which are not relevant to ones own language. This is the normal human tendency.**

For a linguist, however, it would be necessary to identify all the sounds that can be orally produced by a human being. This would be possible only if one studies and understands phonetics. This is one aspect or one part of phonology.

2.5.4 Phonemics as Auditory Phonetics

The other aspect is to know which of the particular sounds found in a language are significant in the language. This would be possible by studying **phonemics.**

Phonemics tells us which of the sounds used in a language are significant and which of them are non-significant. The non-

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

significant sounds are those which, though different, do not cause any difference in the meanings of words in the language. A linguist will have to necessarily distinguish the significant sounds from the non-significant ones.

Thus, as a linguist has to know both the aspects, that of phonetics and phonemics he should get sufficient training in both.

With this introduction to both phonetics and phonemies as two separate branches of phonology let us now study phonetics in some detail

2.6 Summary

We can sumup what we have learnt in the previous paragraphs as follows:-

We have learnt that though linguistics started as Descriptive Linguistics, it changed into Transormational Generative Linguistics which is theoretically different but still is an advancement over Descriptive Linguisties. In order to have a comprehensive idea of linguistics it would be better to commence with descriptive linguistics.

In descriptive linguistics it is assumed that any language can be studied with the help of language specimens collected from a native speaker as an informent. In order to do this a

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

linguist should have adequate knowledge and training in phonetics. Only with this training a linguist would be in a position to identify the sounds he may hear from any language. Knowledge of phonemic helps him to identify the sounds which are significant in a language. Even for a linguist without proper training in phonetics it would not be possible to identify the sounds from different languages.

With this introduction we may now go to study phonetics in some detail.

2.7 Self Assessment Questions:

1. What is Linguistics ? Give a brief theoretical outline of Descriptive Linguistics.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Block - 19

Unit - 3

PHONETICS

DIFFERENT APPROACHES TO PHONETICS

3.0 Organs of Speech

Phonetics is the study of speech sounds we know that all speech sounds are orally produced. Our interest is to know how speech sounds are produced in the oral cavity.

3.1 Physics of Sound

Sound in general, any sound for that matter, is produced when two objects suddenly come into contact with some force, as when we clap our hands, or when two objects which were fully in close contact are suddently separated with force, as when we break a stick. The sudden contact or the break of contact sdisturbs the air around the objects which sets the air into a wavy motion. These waves of air, moving strike the eardrum of the listeners who hear them as sounds. This is how sounds are produced and heard.

Speech sounds are also produced in a similar moanner. They are produced by the distrubance of the air column in the oral cavity of a speaker producing waves which, going out of the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

oral cavity of the speaker, reach the listener's ears and are heard as sounds.

Hou speech sounds are produced, what is the mechanism of speech production, how many different types of sounds can be produced, all these form the subject matter of study in phonetics.

3.2 Different Approaches to phonetics

Under phonetics speech sounds can be studied from three different points of view. They are:- 1) The production or articulation of speech sounds in the oral cavity of the speaker. This is called Articulatory Phoneties. 2) The perception or the listener's impression of the speech sounds. This is called as Auditory Phonetics. 3) The physical properties of speech sounds in terms of the frequency of the sound waves and their components in the form of pitch, formants, loudness and so on. This is called Acoustic Phonetics. Let us first study Articulatory Phonetics.

3.2.1 Articulatory Phoneties

Speech production in the oral cavity of the speaker is called as Articulation of speech. The meaning of the word 'articulation' if you see the dictionary, you will find it to be the act of joining. Articulation, when it refers to speech production, means the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

production of a series of connected sounds or sounds which are connected to form words and sentences. **Speech is said to be a continum and not a sequence of discrete sounds. This has to be kept in our mind when we study phoneties.**

We already know that aritculation of speech or the production of speech sounds takes place by the disturbance of the air column which comes out of the lungs and passes through the gullet, the oral cavity and exits through the mouth an dsome times through the nose. This modification of the air column is caused by the systematic movements of the various parts of the mouth which includes the tongue, the teeth and the lips, the entire region from the gullet to the lips is called the vocal tract or the speech tract and the parts of the mouth which are involved in the production of speech sounds are called the **organs of speech.**

3.2.2 The organs of speech

Having a good knowledge of the organs of speech and their relation to each other and the way in which they are used in speaking, affords a universal frame work in which the sounds of all languages can be classified. This is possible because all human beings, no matter what race or other sub-division of race they may belong to, have the same organs of speech and can make whatever sounds are customary in the language they are brought up speaking

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

For the organs of speech, speech production is an additional and incidental function, their main activity being normal physical or biological activities of breathing, eating and drinking.

The process of speaking involves modification of the air column which enters and comes out of the lungs of the speaker as he breaths, thus producing sounds which can be heard. In this process essentially the entire human respiratory tract and all the parts lying in this react are included in the organs of speech. However,while the air is provided from the lungs as the modifying agents are all situated within the oral cacity from the gullet to the lips. we will discuss the functions of these agents in the production of speech sounds.

We may first identify the organs of speech which are functional in speech production. The figure below gives a schematich representation of a cross section of the parts of the body from the vocal cards upward which are involved in speech production see the figure below

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

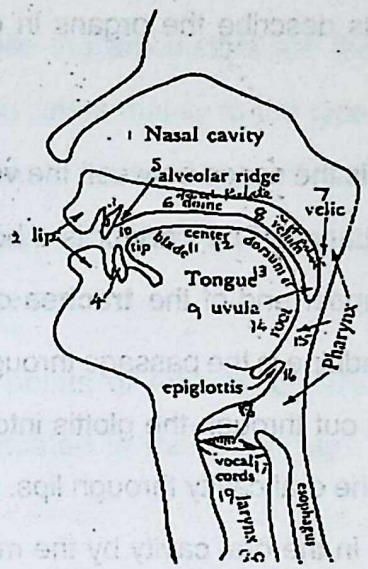


Fig. 1

The organs shown in the diagram are

1. Nasal Cavity
2. the lips
3. the upper teeth
4. the lower teeth
5. the alveolar ridge
6. the hard palate
7. velic
8. soft palate
9. Uvula
10. tip of the tongue
11. blade of the tongue
12. centre of the tongue
13. back of the tounge or Dorsum
14. root of the tounge
15. pharynx
16. epiglottis
17. esophagus
18. vocal cords
19. glottis
20. larynx
21. wind pipe

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

These are the organs which are in the oral cavity above the glottis. Now let us describe the organs in order to understand their function.

The **glottis** is the space between the vocal cords which are contained in the Larynx. The **Larynx** is a box like cartilagenous structure at the upper end of the **trachea** or the windpipe. The trachea or the windpipe is the passage through which the air from the lungs passes out through the glottis into the oral cavity and then goes out of the oral cavity through lips. It is this outgoing air which is modified in the oral cavity by the movements of the organs of speech to produce a variety of sounds.

3.2.3 Functional division of the organs of speech

The organs of speech can be broadly divided into two categories as movable and immovable. The movable organs are mainly attached to the lower jaw while the immovable organs form part of the upper jaw.

In the process of articulation the movable and immovable parts have specific roles to play there are mainly theree components in the process of articulation which are 1) The place or point of articulation 2) The articulator and 3) the manner of articulation.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

The places or points of articulation are mostly the immovable parts while the articulators are the movable parts. Manner of articulation refers mainly to the type of movement of the articulator and also to the type of modification of the air column made by the articulator before it is let out through the mouth to mix with the outside air.

The places or points of articulation are the immovable organs which are situated in the upper jay. They are listed below:-

1) The upper lip 2) the upper teeth 3) the alveolar ridge also called as the teeth ridge, 4) the hard palate or the alveolar region, 5) the soft palate or the velum 6) the dome or the roof of the mouth.

The articulators are the movable organs which are attached to the lower jay. They are listed below:-

1) the lower lip 2) the lower teeth 3) the tip of the tongue 4) the blade of the tongue 5) the middle of the tongue 6) the backof the tongue 7) the Uvula.

1.4.5 In the above paragraphs we have given only a list the movable and the immovable organs of speech as articulators and places of articulation without giving any description of the said organs. But it is necessary to describe each of the organs so that

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

their functions are properly understood we may start from the tongue.

3.2.3.1 The tongue

The tongue is the most versatile organ of speech. It is the most movable part in the oral cavity an dso active in speech production tha tht ewords 'gongue' and 'language' are some times, used as synonyms in many languages, including kannada.

The tongue is an extremely mobile fleshy organ which can be raised and lowered. We can raise and lower either the front or the middle or the back of the tongue and we can do this either in the centre of the gongue can be divided conveniently into five portions, namely, 1) the tip or the apex 2) the blade 3) the front 4) the back and 5) the root.

The **lip** or the apex is the portion that lies at rest opposite the alveolar region. As an articulator it may articulate against the teeth. the alveolar region or the palate.

The **blade of the tongue** consists of the front most upper surface of the tongue including tip when the tongue takes a flat, thin and wide postion.

The **front of the tongue** is the portion of the tongue that lies at rest opposite the front part of the palate. It may articulate against the alveolar region, the palate or the velum.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

The back of the tongue

The **back of the tongue** which is also called as the **dorsum** is the portion which lies at rest opposite the velum or the back part of the palate. It may articulate against the back part of the palate or any part of the velum or the uvula.

The root of the tongue forms the front wall of the pharynx. Though the root of the tongue is not generally listed as an articulator it can alter the size of the pharyngal cavity and thus create some modifications in the sounds produced elsewhere.

3.2.3.2 The lips

Both the lips are movable and are of importance in the production of sounds. However, in comparison, the lower lip is more flexible than the upper one. Therefore the lower lip is considered as an active articulator. It may articulate against the upper lip or the upper teeth. The spreading and rounding of the lips together and their protrusion are very important in modifying the quality of sounds, expecially the vowel sounds.

3.2.3.3 The vocal cords

The vocal cords are two movable membrances or two horizontal muscular tissues, one on either side of the passage which is called the glottis which is already referred to earlier. The vocal

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

cords are elastic muscular tissues which can be tensed or relaxed at will. They may be kept open so as to cause no obstruction to the air passage (as in normal breathing) or be completely closed so as to stop the air or be partially closed so as to produce different types of audible sounds. As they are elastic they may be closed in such a way that the air passes through them with force causing them to vibrate. **The sound which is produced as a result of this vibration is called voice.**

This is a brief description of th eorgans of speech.

Though this description may appear to be drab and supeflacous now, when we actually describe the production of sound, we may have to refer back to these paras.

We may now go to study the production and classification of speech sounds.

3.3 Self Assessment Questions:

1. Write Short notes on:-
   1. Vocal cords, 2. Tongue.
2. What are the organs of Speech? How are they responsible for speech production?

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Block - 19

Unit - 4

PHONETICS

4.0 Production and classification of speech sounds

We have already acquired sufficient knowledge of the organs of speech which are responsible for speech production. We know that in the process of speech production there are three main components, namely the place of articulation, the articulator and the manner of articulation.

We also have a knowledge of the places of articulation and also the articulators in the oral cavity. We know that the manner of articulation refers to the dynamic process of the modification of the air column coming out of the lungs through the glottis into the oral cavity before it is let out through the mouth to mix with the outside air. The modification caused will be by the articulaor moving towards a plsce or point of articulation which modifies the movement of the air column. Thus it is this processof modification or, in other words, **the manner of articulation** which produces a variety of sounds.

We will discuss, briefly, in the following pages the process of sound production and the different types of sound that can be produced on the basis of the manenr of articulation.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.1 Manner of Articulation - Production of different speech sounds.

On the basis of the manner of articulation speech sounds can be distinguished to be of two main types, namely, **vowels** and **consonants**

4.1.1 Vowels

Vowels are those in which the organs of speech, primarily the tongue, are used to form resonance chambers through which the stream of air passes out without any obstruction or audible friction. The difference in the shape and size of the resonance chambers causes the difference in the qualities of the vowels produced.

4.1.2 Consonants

Consonants are those in which the organs of speech obstruct the air stream in one way or the other either by stopping the air stream for a temporary fraction of a second or by foreing it into a narrow passage causing audible friction. Different articulators and different points of articulation produce different types of consonants.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.2 Articulation of vowels

Let us have some more details regarding the articulation of vowels. earlier we have learnt that in the articulation of vowels the outgoing air stream is not obstructed in any way. but with the help of the organs of speech the oral cavity is turned into different resonant chambers so that different vowels are produced. What is a resonance chamber ? we should know what a resonant chamber means. A resonant chamber is one which resonates according to a particular frequency of vibrabtion. The oral cavity that is, the cavity in the mouth fromt he glottis to the lips forms a single chamber containing the outgoing air stream. The air particles in this stream can be set into sympathetic vibration of the vocal cords. A chamber in which there is a vibrating air stream is called a resonant chamber.

Now, how do the vocal cords set the air stream into sympathetic vibration? we already know that the vocal cords vibrate when the air passes through the glottis, when the vocal cords virbrate, the air stream in the oral cavity also vibrates producing sounds which we call as vowels. The quality of the vowel sound differs according to the difference in the size and shape of the resonating oral chamber through which the air passes. Let us see practically how this happens.

All of us can do this experiment suppose we try to open our mouth as widely as possible keeping the tongue in an effortless

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

position and pronounce the sanskrit vowel (आ). This (आ) keep pronouncing this vowel for a while and stand before a mirror. You can see your mouth widely open and you can also observe that the tongue is at rest, but ht eback of the tongue is slightly bulging without any effort on your part. This shape of the oral cavity can be conceived to be in the form of a triangle ABC in which A represents the position of the upper lip, B represents the position of the lower lip and C represents the position of the glottis and the triangle ABC can be called as an vowel triangle for the vowel (आ). See the figure 2 given below.

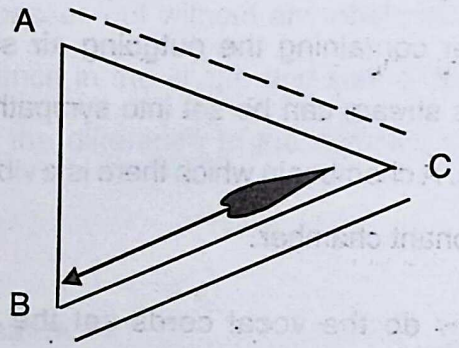


Fig. 2

In this triangle BC represents the position, approximately of the tongue and AC represents the roof of the mouth. The area of the triangle represents the **resonant chamber** for the Sanskrit vowel (आ). Supposing that now we try to bring the lower jaw as close to the upper jaw as possible so that we can produce an (ई) and stand in front of a mirror looking at our own face we can see that between the upper lip and the lower lip there is only a

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

very small opening. We can also feel that now our tongue in the mouth has taken a different position. We can feel that the front part of the tongue is very near the alvealar ridge behind the upper teeth an dthe middle and back part of the tongue is lowered. Now our triangle of the vowel will be quite different. See the fig.3 given below.

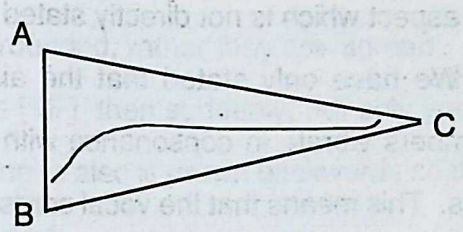


Fig. 3

When we see the two triangles we can also see that the size and shape of the resonating chambers for the two vowels (आ) and (ई) are also quite different. This is the reason for the two vowels being heard differently.

But the reason for our reference to an vowel triangle and asking you to stand before a mirror was not simply to indicate the difference between the resonant chambers for (आ) and (ई). There are other points which a mirror can help us to understand the articulation of vowels. In the case of the vowel (आ) the mirror showed that the mouth is wide open and the back or the hind part of the tongue is raised. **Both these aspects namely, the openness of the mouth and the back of the tongue being raised to form a resonant chamber are the articulatory**

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

characteristics of the vowel (आ). Similarly in the case of (ई) the closeness of the lips visible in the mirror and the feeling that the front portion of the tongue is raised to very near the hard palate or the alveolar ridge is the articulatory characteristic of the vowel (ई).

Another aspect which is not directly stated is the voicing of the vowels. We have only stated that the air column in the resonant chambers vibrate in consonance with the vibration of the vocal cords. This means that the vocal cords are vibrating. It is the vibration of the vocal cords which causes the air column to vibrate and thus make the vowels audible. **In other words it means that the vowels are voiced, All vowels are normally voiced.**

Thus from the discussion we have had in the previous paragraphs we have understood that, besides being voiced, vowels have articulatory characteristics of 1) the openness or the closeness of the mouth and 2) some part of the tongue being the articulator to form the resonant chamber.

There is one more characteristic which we have to know namely the posture of the lips. Now, again stand before the mirror and try to pronounce the Sanskrit vowel [ऊ]. You will now see that both your lips suddenly protrude forward forming a round shaped exit for the air to come out. Now, continuing the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

pronunciation of the vowel try to feel which portion of the tongue is articulating you will feel that it is the back of the tongue which is raised. To confirm this, remaining before the mirror you may try to pronounce an [ई]and [ऊ]. alternately one after the other. You will find out two intersting factors. When you are pronouncing [ई] the front of the tongue is raised towards the hard palate and the lips are not rounded, rather they are 'spread'. But when you try to pronounce [ऊ] then suddenly, not only your lips become rounded, you tongue also is drawn backwards so that the back of the tongue is raised.

Now while trying to explain the pronunciation of the vowels [आ], [ई] and [ऊ] we have also explained that the pronunciation of vowels depends upon three important characteristics namely,

1) the openness or closeness of the mouth

2) the posture of the lips and

3) the part of the tongue which is involved in the articulation.

As the tongue is very mobile, any part of the tongue may articulate causing differences in the vowels produced. With reference to openness of the mouth we have taken the two extremes. In case of [आ] it is fullly open and in case of [ई] it is fully close? But it is quite possible that there could be different degrees of openness or closeness of the mouth which makes the

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

vowels different. In the light of the above we should be able to understand that there could be a large number different vowels that could be pronounced by human beings. In fact different language have different vowels and that is the reason why we feel that many languages are difficult to be learnt. However, linguists should be able to pereeive the different vowel pronunciations and identify their characteristics. Therefore in order to provide some convenient reference points, Daniel Jones, a well-known phonetician proposed a set of cardinal vowels which means vowels with a fundamental or standard pronunciation which could be used to compare the vowels of natural languages for description.

4.3 Cardinal vowels

The cardinal vowel system represents a set of eight vowels which are symbolised as, [i], [e], [E], [a], [ɑ], [ɔ], [o] and [u]. These vowels can be represented on the triangular vowel chart as follows

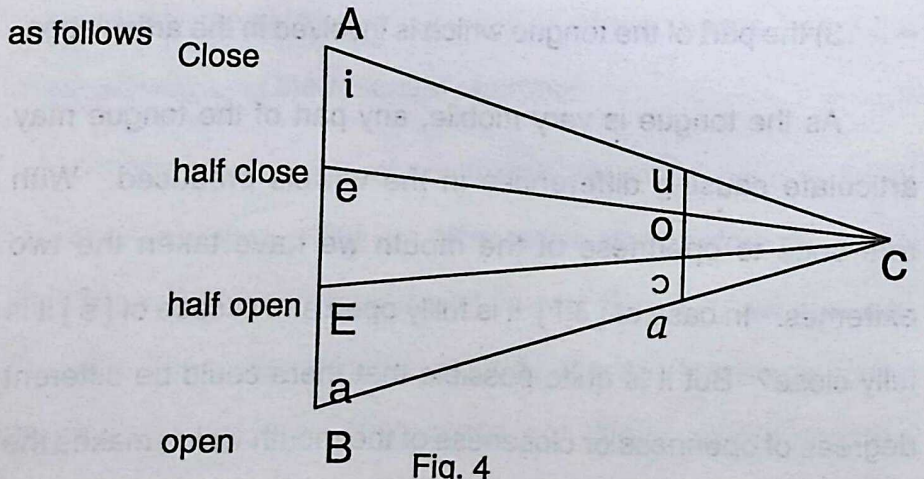


Fig. 4

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

[i] close, front of tongue raised

[e] half-close, front of tongue raised

[E] half-open, front raised

[a] open, front raise

[u] close, back of tongue raised

[o] half-close back of tongue raised

[ɔ] half open back of tongue raised

[ɑ] open back of tongue raised

The same can be presented in a descriptive chart as follows:-

1 Tongue height	2 Tongue Position	
	Front	Back
High (or close)	[i]	[u]
Higher-mid (half close)	[e]	[o]
Lower mid (half open)	[E]	[ɔ]
Low (open)	[a]	[ɑ]

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

We may notice that in the chart given above instead of open or close, which is with reference to the month, reference is made to tongue height a shigh and low. This is done to indicate the articulator. In the production of the vowels the articulator is the tongue and the words high, low etc refers to the raising of the tongue and similarly in the second column also i.e., column 2 the reference is made to the part of the tongue, front or back, which is raised.

In the above paragraphs we have given some explanation of the articulation of vowels. We have also indicated that the number of different vowels that can be articulated could be considerably large and it may not be possible to describe all the vowels. Instead, we have given a list of cardinal vowels proposed by Daniel Jones. They are also known as **primary vowels.**

4.4 Central Vowels

It may be seen from the chart that the cardinal vowels represent only the front and back vowels which are articulated by the front and the back parts of the tongue. The central vowels, ie., the vowels that are articulated by the centre of the tongue are not brought out in the above system. Many Indian Languages have central vowels which may be distinguished in the same way as the front and back vowels on teh basis of the height of the tongue.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.5 Voiceless vowels

It has been stated earlier that the vowels are generally voiced. It is because the vowel sounds are produced with the vocal cords vibrating. However, it is also prossible to produce voiceless vowels. Voiceless vowels are produced when the air from the lungs is allowed to pass through the glottis with the vocal cords kept apart. The vocal cords do not vibrate and the air passing through the glottis enters the oral cavity where the position of the tongue and the posture of the lips are so formed as to produce a particular vowel sound. The air passing through the oral cavity escapes out between the lips. The noise of turbulance of the escaping air is called a voicelss vowel. Normally such vowels are produced when we are wispering.

4.6 Stress

The intensity or loudness with which a speech sound is produced is called stress. Stress depends upon the intensity or degree of muscular effort exerted in the production of a speech sound. The effort determines the ampligude of the vibration of the vocal cords. That is the amount of the puff fo air which passes through at each opening of vocal cords determines the stress. The larger the puff of air the greater the stress. Languages which use stress in their phonemic system are said to have a stress accent system.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.7 Pitch

We have already noted that the vocal cords are endowed with the capacity to vibrate at different frequencies when air passes through them. This frequency of vibration of the vocal cords is called pitch. When the frequency is high the vocal cords are said to vibrate with a high pitch and when the frequency is low they are said to be vibrating with a low pitch and when the frequency is low they are said to be vibrating with a low pitch. Though the vocal cords are capable of vibrating in different pitches, not more than four or five relatively distinct pitch levels can be found in any language. When the vocal cords vibrate it is not necessary that they vibrate at the same frequency all through in a simple stretch. Instead a sound may start with a high frequency ie., high pitch and end at a low frequency or low pitch As a result the vowel sound produced will have a pitch which fals from a high to low level. similarly it is prossible to raise pitch from a low to high level.

4.8 Tone

If pitch is significant in a language so that the difference in pitch also causes a difference in the meanings of words then the pitch is called **tone.** If system of tone in a language is based on the levels of tones then it is called a **register system.** If it is based on changing levels then it is called a **contour system.** A

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

language may have either a register system or a contour system or a combination of both the systems.

4.9 Articulation of consonants

Just as in the articulation of vowels, the posture of the lips, the part of the tongue that is articulating and the level of the tongue to which it is raised were important in distinguishing different vowels, in the articulation of the consonants also the following points are important.

In the articulation of the consonants the place or point of articulation, the articualtor and the manner of articulation are important to distinguish different consonants.

Besides the above the state of the glottis which contains the vocal cords is also important. If the vocal cords are vibrating at th etime of articulation then the consonant produced will be a voiced consonant. If the glottis is open without the vocal cords virbrating them the consonant produced will be voiceless consonant Let us first consider the manner of articulation of the consonants.

4.10.1 Manners of articulation of consonants

On the basis of the manner of articulation consoants can be classified as

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1) stops 2) affricates 3) fricatives

4) Nasals 5) Laterals 6) Trills and

7) Flaps

Let us see how these are articulated.

4.10.2 Stops

In the articulation of stop an articulator moves to a point of articulation, air is stopped for a moment. The uvula also simultaneously closes the velic passage so that the air has no passage to go out. Thus the air is temporarily held up for a short moment. Then after the moment of closure the contact between the articulator and the point of articulation is suddenly released. As a result a plosion is heard. Such a sound is called as a **stop** which indicates that the air was stopped. It is also called as a plosive to indicate that the stopped air was suddenly released by creating an audible plosion.

4.10.3 Affricates

In the articulation of an affricate, an articulator movers to a point of articulation and presses against it stopping the passage of air as it was in the case of a stop. But at the time of release, instead of releasing suddenly, the articulator leave the point of articulation slowly so that the air passes through the passage with

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

friction. In this case also the velic was kept closed as it was in the ease of the stop. Such a sound is called an **affricate.**

4.10.4 Fricatives

In the articulation of fricatives an articulator moves to a very near position of the point of articulation, not touching it, but reating a very narrow passage or a construction through which the air passes with great friction. Such sounds are called a fricatives or spirants. For the fricatives also the velic is closed.

4.10.5 Nasals

In the articulation of nasals, an articulator moves to a point of articulation and presses against it as it is done in the case of stop sounds. But the air, instead of being stopped, is allowed to pass through velic passage which goes out through the nostrils. The contact between the articulator na dthe point of articulation is released for the articulation of the next sound. Such sounds are called a **Nasals.**

4.10.6 Laterals

In the articulation of the laterals an articulator touching the point of articulation closes the air passage in the central or the median line of the passage, but allows the air to pass through one or both e the sides. Such sounds are called **lateral sounds.**

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.10.7 Trills

In the articulation of trills an articulator moves towards a point of articulation without touching it or obstructing the air column. Instead the articulator allows itself to move in rapid vibration by the force of the outgoing air. Such a sound is called a **trill.**

4.10.8 Flap

In the articulation of a flap the articulator moves to the point of articulation in a fast single balliotic or sweeping movememnt. Such a sound is called a **flap.**

4.10.9 Voiced and voiceless consonants

All these sounds, the stops, the affricates, the fricatives, the nasals, the laterals, the trills and the flaps can be either voiced or voiceless. As it has been already mentioned earlier, if the vocal cords are vibrating during the articulation of these sounds, they will be voiced on the other hand if the glottis is open and the vocal cords are not vibrating then they are called **voiceless** sounds.

4.10.10 Aspirating consonants

Aspiration as a feature of the consonants mainly the stops, but sometimes, the nasals and the laterals also is observed in

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

many Indian languages. Aspiration refers to the quantum and the force of air released at the time of the release of the stops and other consonents. In the Indian grammatical tradition aspiration is called *as maha:pra:na* which means great quantity of air. In the articulation of stops, nasals and laterals we know that after the contact between the articulator and the point of articulation the contact will be release suddenly. At the time of this release if an extra puff of air is added to the release then the consonants will be **aspirated.** If the air released is normal then the consonants will be unaspired consonants.

This gives a brief description of the manners of articulation of consonants. Let us now see how consonants may be classified on the basis of the points of articulation.

4.11.1 The places or points of articulation

The places or points of articulation were already listed at the time when we were discribing the organs of speech. However, we will mention them again here for immediate reference. The points of articulation mentioned earlier were the following:-

1) the upper lip
2) the upper teeth
3) the alveolar ridge.
4) the hard palate,
5) the soft palate or the velum
6) the roof of hte mouth or the dome.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

The consonants that can be produced at the above palces or points of articulation can be classified as .

1) Labials, 2) Dentals, 3) The alveolars,

4) The palatals 5) Velars and 6) Cerebrals or Cacuminals

4.11.2 Labials

Labials are produced when an articulator comes into contact with the upper lip as the point of articulation. Usually the lower lip acts as the articulator and the resultant sound is called a bilabial sound.

4.11.3 Dental

Dentals are produced when an articulator comes into contact with the upper teeth as the point of articulation. The tongue acts as the articulator comming into contact with the upper teeth. The resultant sound is called a **dental sound.**

Instead of touching the upper teeth alone the tongue may come in between the upper and lower teeth. Then the sound produced is called an **interdental sound.**

sometimes the lower lip may act as the articulator coming into contact with the upper teeth. Then the sound produced is called a latro - dental sound. Thus the teeth as the point of articulation three types of sounds can be produced.

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

4.11.4 Alveolars

Alveolar sound is produced when articulator which can be either the tip or the blade of the tongue, comes into contact with the alveolar ridge, The sound thus produced is called an **alveolar sound.**

4.11.5 Palatals

A palatal sound is produced when an articulator, usually the front of the tongue comes into contact with the hard palate as the point of articulation. Such a sound is callled a **palatal sound.**

4.11.6 Velars

A velar sound is produced when an articulator usually the back of th tongue, comes into contact with the soft palate or the velum as the point of articulation. Such a sound is called a **velar sound.**

4.11.7 Regarding the alveolar, palatal and velar sounds, it may be noted that these three regions cover the entire area of the roof of the mouth between the upper teeth and the uvula. As each of the regions is sufficiently wide to allow an articulator to touch different points within th eregion, the alvedor, the palatal and the velar sounds can further be distinguished as follows:-

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

1) Alveolars may be distinguished as alveolar and post alveolar,

2) The palatals may be distinguished as prepalatal, palatal and post palatal.

3) Velars may be distinguished as per-velar, velar and post velar sounds.

4) Besides the above, the uvula, the pharynx and the glottis may also be considered as the points of articulation. The uvula has no power of independent muscular movement but can be lowered into a grove formed by the back of the tongue and be made to vibrate in a passing air stream. A sound thus produced is called a uvular trill.

5) In the pharynx, with the pharyngeal wall as the point of articulation and the root of the tongue as the articulator pharyngeal sound scan be produced. With the glottis as the point of articulation and the vocal cords as the articulators glottal sounds such as the **glottal stop (glottal catch)** and **glottal fricatives** can be produced.

This gives us a general idea of the sounds based on the points of articulation.

It may be noted that the manners of articulation and the points of articulation mentioned in the preceding paragraphs

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

indicate only the general types of articulation of consonants. Actual sounds found in any particular language will have to be described specifically with refeence to the manners and points of articulation actually involved in their production. It may also be noted that in describing and classifying consonant sounds mainly the manners of articulation and the points of articulation are considered. The articulators are not necessarily mentioned.

4.11.8 Secondary Articulations

In the preceding paragraphs we have discussed the articulation of vowels and consonants mainly with reference to one major process of articulation where only one single articulator, a point of articulation and the movement made by the articulator are involved. Such articulations are called Primary Articulations. It is also possible to modify a speech sound by a secondary articulation. Secondary Articulations are articulations made at the same time as the primary articulations by articulators which are left free by the primary articulation. Some scholars make a further distinction in secondary articulation. Co-articulation is articulation in which two articualators simultaneously articulate in such a way that the modification of the air stream is equally intense in both the articulations. In the secondary articulation, however, the modification of the air sheam will be of lesser intensity. We may consider here, both of them as secondary articulations without

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

any distinction. As an example we may cite a labialised velar consonant while producing a velar stop, as we have already stated earlier the outgoing air stream is stopped by the back of the tongue for a moment at the velar region and then released. The released air has to escape through the lips. At the time when the air escapes out the lips take a rounded shape which changes the nature of the sound heard. Such a sound would be a **labialised velar sound.** Similarly secondary articulations to **velarise,** to **palatalise** or to **pharynagealise** a sound would be possible.

4.11.9 Nasalistaion

Nasalisation as an additional feature of articulation of maninly vowels is done by allowing the outgoing air stream to pass through the nasal cavity also by keeping the velic open. In other words in the articulation of a nasalised vowel the air stream sescapes both through the oral cavity as well as the nasal cavity.

4.12.0 In this context it may be useful to provide corresponding terms used by Panini in the Ashtadhyayi grammar. It is given in the form of a glossary.

Vowel	= स्वर
Consonant	= व्यञ्जन
Stop	= स्पर्श
Nasal	= अनुनासिक

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

Flap	=	ताडित
Fricative	=	ऊष्म
Voiced	=	घोषित
Voiceless	=	अघोष
Aspirated	=	महाप्राण
Unaspirated	=	अल्पप्राण
Place of Articulation	=	स्थान
Manner of Articulation	=	प्रयत्न
Labials	=	औष्ठ्य
Dental	=	दन्त्य
Palatals	=	तालव्य
Velar	=	कण्ठ्य
Retroflex	=	मूर्धन्य

The संज्ञाप्रकरण of Siddhanata Kaumudi and the Shiksha of Panini may be referred to for more details

4.13 Self Assessment Questions

Write Short notes on:

1. Vowels
2. Consonants
3. Cardinal Vowels
4. Point of Articulation
5. Manner of Articulation

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

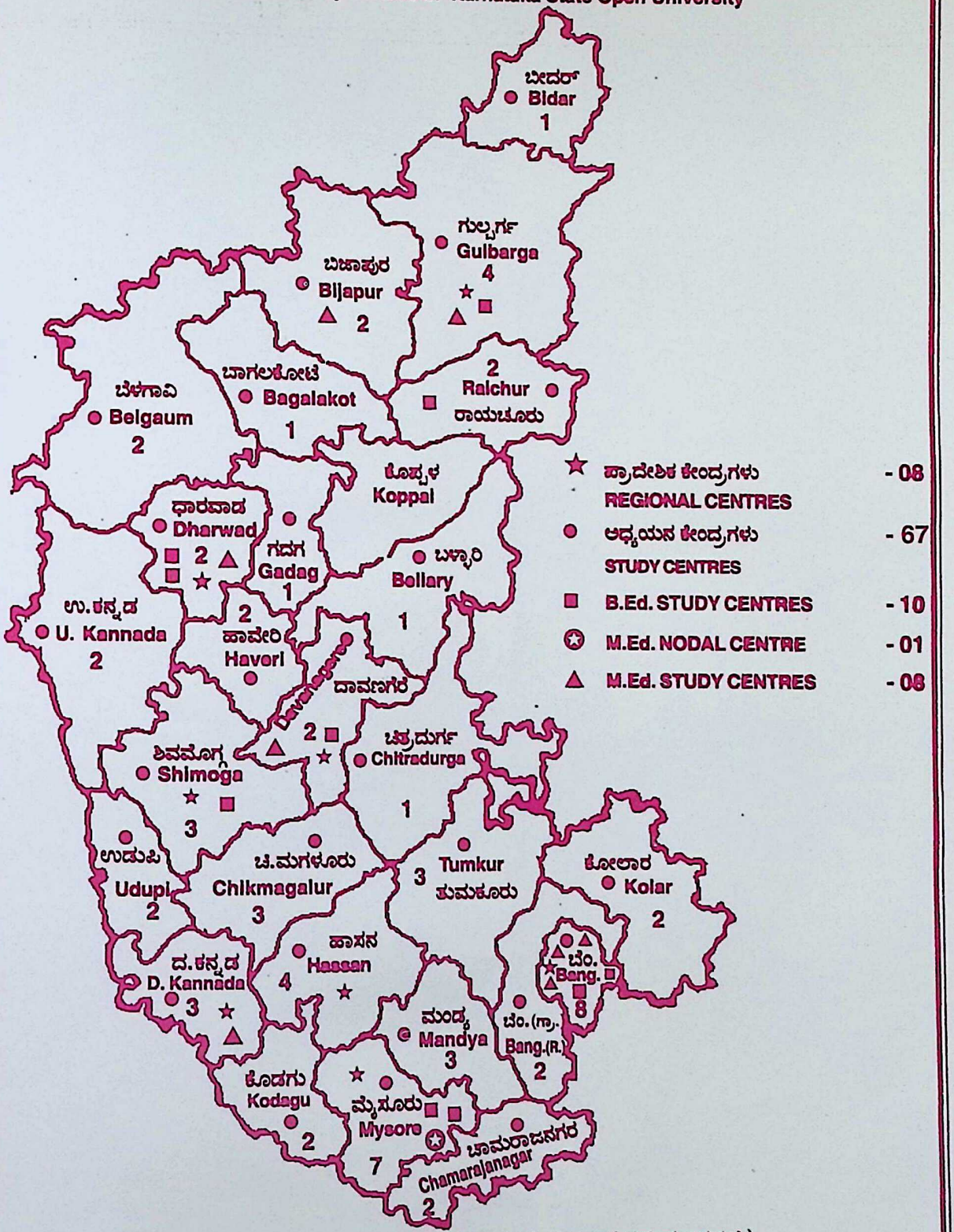
ಆದೇಶ ಸಂಖ್ಯೆ : ಕರಾಮುವಿ/ಸಿಪಾವಿ/4-813/2007-08, ಚೈತ್ರ ಎಂಟರ್‌ಪ್ರೈಸಸ್, ಬೆಂಗಳೂರು ತಾ|| 17.11.2007
ಕಾಗದ : 60 ಜಿ.ಎಸ್.ಎಂ. - ಎಂ.ಪಿ.ಎಂ. ಮುಖಪುಟ 170 ಜಿ.ಎಸ್.ಎಂ. ಆರ್ಟ್
ಪರಿಮಾಣ : 400 ಪ್ರತಿಗಳು (ಸಂಖ್ಯೆ 1 ರಿಂದ 400)

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಪ್ರಾದೇಶಿಕ ಹಾಗೂ ಅಧ್ಯಯನ ಕೇಂದ್ರಗಳು

Regional and Study Centres of Karnataka State Open University

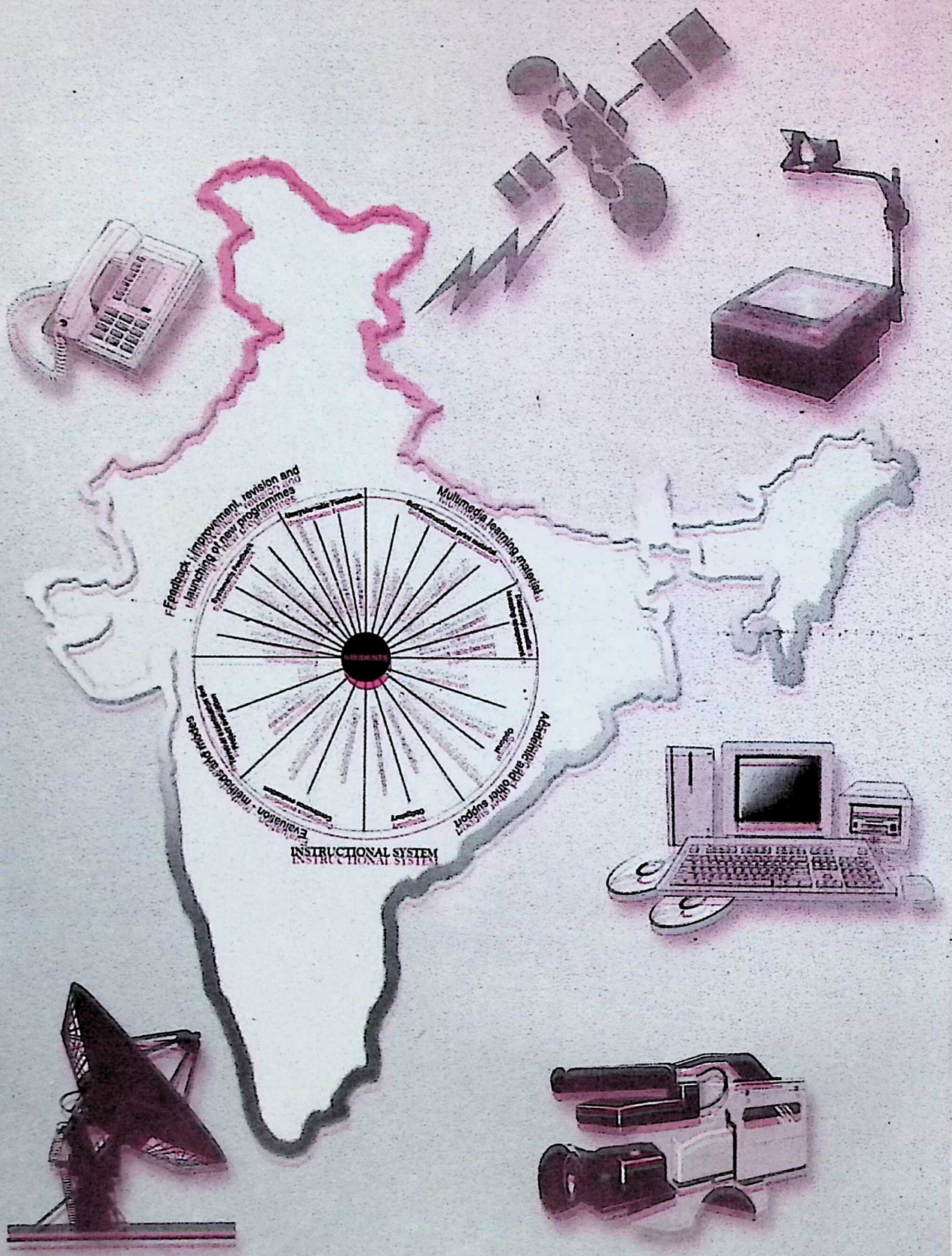


(ನಮೂದಿಸಿರುವ ಅಂಕಿ - ಜಿಲ್ಲೆಯಲ್ಲಿರುವ ಒಟ್ಟು ಅಧ್ಯಯನ ಕೇಂದ್ರಗಳ ಸಂಖ್ಯೆಯನ್ನು ಸೂಚಿಸುತ್ತದೆ.)

(The Number indicate the total number of study Centres existing in that districts.)

CC-0. In Public Domain. Cuddalore Collection. TN.

Digitization by eGangotri-South Center


Feedback - improvement, revision and launching of new programmes
Multimedia learning material
Academic and other support
Evaluation - methods and modes
INSTRUCTIONAL SYSTEM

CC-0. In Public Domain. Cuddalore Collection. TN.